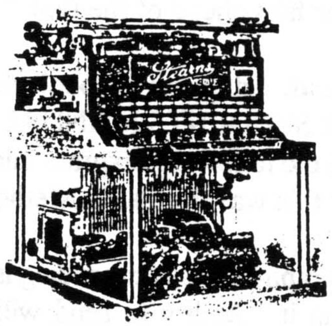
April 27, 1999

Dear Friends:

Burlingame Telegraphing Typewriter, part II. Tony Rogozinski pointed out an ebay sale of a Burlingame Telegraphing Typewriter brochure, unfortunately, after it was already sold. Jim Kreutzer was the successful bidder, and he kindly provided me with photocopies of the material, as well as some other items that he had picked up over the years. See Keyletter #22 for my original write-up on this item. Up until I got the stuff from Jim I was not entirely sure that the things ever existed. A lot of my earlier material was pretty schlocky, and looked a lot like a figment of a hyperactive imagination. The brochure even contained a picture of this wondrous machine! The following information was extracted from the brochure and a stock certificate:



THE BURLINGAME TELEGRAPHING ATTACHMENT CONNECTED WITH A STEARNS TYPEWRITER—Front View

The Burlingame Telegraphing Typewriter is the most wonderful electrical invention of the age, and will prove a more potent factor in revolutionizing the world's message system that even the Bell Telephone Company, which has paid millions of dollars in dividends to its stockholders. Just imagine an instrument that, by simply connecting it with any Western Union, Postal, Fire or Burglar Alarm wire, or with the Marconi or any other wireless system, telegraphic messages can be sent direct from a typewriter keyboard and will be received at the other end of the line printed as plain as A, B, C!!! That is the BURLINGAME machine.

Own a PLA Key! Morse Express has announced that it has obtained a supply of surplus Chinese Military (People's Liberation Army) keys. There are two basic types of key, a heavy chrome base key and a light training key on a wooden base. In the heavy keys (model K4/Dll7), condition varies, and there are also many model differences. They were bought surplus from the People's Liberation Army, who ordered them from at least two different manufacturers over a period of 40 years. They weigh two and a half pounds each and are very solidly made, with a nice finish. Because condition is so variable, Morse Express is offering these keys at two prices-- "pot luck' at $65 per key, or $75 for a special 'pick.' Supplies are limited. The training key (model K7) is surprisingly nicely done. It's on a wooden base, but the mechanical parts are chromed and it has all of the usual adjustments, including machined needle bearing seats on the trunnion. They weigh half a pound and are complete with cord. The K7's are in factory fresh condition, in original packaging, and priced at $26.50 each. Pictures and more info are available on the Morse Express web site at "www.MorseX.com". Call (800)238-8205 toll free to order by phone, or (303) 752-3382 for information.

Mecograph. Several years ago I acquired a 1907 Mecograph in terrible shape. Some dolt had chrome plated it and several parts were missing. I traded it off, and Doug Palmer later ended up with it. Doug recently sent me pictures and the following comments: Recognize this one? Took me a year and a half, but I finally finished it. My original intention was to remove the chrome plating, as well as the Nickel and Copper underneath, leaving an all-brass Mecograph. However, as I found out, most of the parts are STEEL, so I only stripped off the chrome, leaving it Nickel-plated. I stripped the chrome off the base, and Japanned it. Voila! Actually, this is the correct finish for this key, Japanned-base with Nickel plated upper parts.

I found a new spray-on lacquer at Home Depot called "Painter's Touch". It really is a lacquer, and it dries quick and hard. No need to leave the bug sitting in a dry closet for a month to cure. The only problem I found with it is that it has trouble sticking to a base with a smooth finish. They suggest roughing the surface up with sandpaper. I didn't do this on this key because it had a plated base, and just couldn't bring myself to sandpaper it. It still sticks pretty well, but you gotta be careful when you attach the contact posts to the base, because they can cause some paint to peel loose.

Gold Bug Redux. Derek Cohn is now the proud owner of a Bunnell Gold Bug, serial number 26. (See Keyletters #16 and #25). It is most interesting that this bug has the pinned label, so it is a type "B", yet the serial number falls ahead of the type "A" bugs. Go figure.

Catlin Method. I dug into the bookshelf and found a United States Army Training Manual, No. 26, "RADIO OPERATOR STUDENTS MANUAL FOR ALL ARMS, Part II, CODE PRACTICE, Volume 1" DATED 1925. It had the following diagram and sending instructions. I sent a copy to Harry Lewis, W7JWJ, and he verified that this was the Catlin Method as he was taught it.

> The telegraph key used in sending is shown in Fig. 3, which also shows the correct method of holding and operating it. Ability to send will depend to a very great extent on the student acquiring the proper movement of his wrist and hand in operating the key. This movement can be best described in conjunction with Fig. 3. On this figure several arrows appear. Their explanation is as follows: When the key is closed, the hand executes a forward and downward rocking motion. The wrist moves upward. On opening the key, these two movements are reversed, the hand rocking backward and upward and the wrist moving downward. The importance of operating the key in this manner can not be overemphasized and the student should make every effort to acquire this motion exactly as illustrated. It is important that the back of the hand and wrist be kept horizontal and not tilted. In order to properly operate the telegraph key, it must be adjusted in a certain manner. Correct adjustment of the key is obtained as follows:

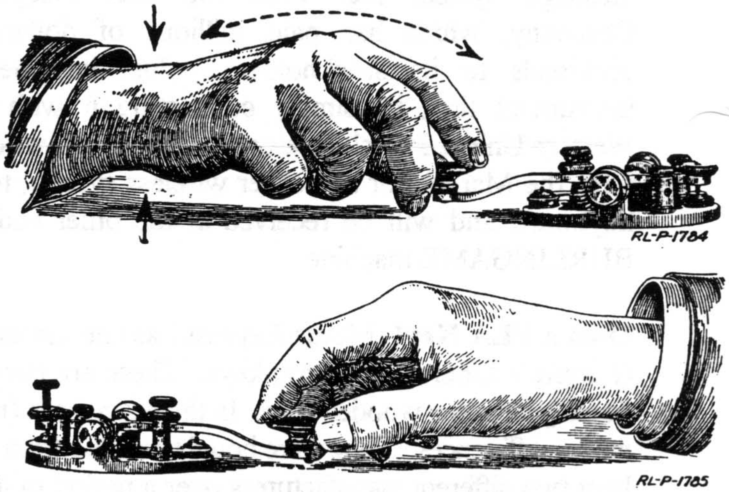


Fig. 3.—Position of the hand in holding the key

> a. Adjust the two trunnion screws which form the pivot of the key lever. See that the lever moves freely up and down and with a very slight amount of side play. In adjusting these screws, be sure that the upper contact of the key, which is mounted on the key lever, is kept directly over the lower contact mounted on the base of the key. When the correct adjustment of the trunnion screws has been obtained, lock them by means of the locking nut on each screw.
>
> b. Unlock the screw on the back end of the key lever and adjust it until the knob of the key moves up and down approximately one sixteenth of an inch when the key is operating. Lock the screw in this adjustment.
>
> c. Unlock the screw which passes through the key lever just in rear of the key contact and adjust it until the amount of pressure required to close the key is comfortable to the operator using the key. The exact

adjustment of the knob will vary with different operators and must be determined by the operator to suit himself.

The student will be required to execute all sending practice given in this Unit Operation with a small washer or penny balanced on the back of his wrist where the wrist joins the hand. The purpose of this is to prevent the hand being turned to either side while the key is being operated. If during the operation of the key the washer falls off, the student should stop sending and replace the washer.

Self Winding Clock Company. The following article is from *The American Clocks, Volume 2* by Tran Duy Ly. It is reprinted with permission by the Arlington Book Company, 2706 Elsmore Street, Fairfax, VA 22031. For email, contact them at "info@arlingtonbooks.com".

SELF-WINDING CLOCK COMPANY

The Self-Winding Clock Company was formed in New York in 1886 by Charles Pratt who became the company's first president in collaboration with Henry Pond who remained with the company until his retirement to a rural community in Mississippi in 1890. Pond was far from inactive after his retirement from the company with many patents in the areas of telegraphy and clock improvements issued to him during this period. Henry Chester Pond (1844-1912) of Brooklyn, New York, received his first patent for an Electro-Mechanical Clock, patent number 308,521 on November 25, 1884. An improved version of this rotary motor model was awarded a patent in 1887, with many innovations and additional patents continuing through the following years, culminating in the ratchet & pawl vibrating motor which became the standard for much of the firm's production.

The basic principle of utilizing a small portion of the clock's mainspring, rewound on an hourly basis, led to more uniform power to the clock mechanism and improved timekeeping characteristics. Another factor which contributed to the success of Self-Winding was the use of the sealed dry-cell battery which became available in the late 1880's, as contrasted with the wet cells with their caustic and unwieldy liquids, used by other makers of Electro-Mechanical clocks.

In 1887 the Self-Winding company was offering twenty-six models, three mantel and the remainder wall clocks. Prices ranged from a high of $875.00 to a low $30.00, all being considerably more expensive than similar spring or weight-driven models. Some models were offered with two different grades of movements, the better one being $35.00 more.

Cases and movements, especially during the earlier period of the firm's history, were made by Seth Thomas, Howard, and H.C. Thompson. It would seem that Self-Winding bought the basic movements and added the winding section and other attachments in their own plant. As time progressed, the company's facilities were expanded to permit the manufacture of the entire movement at their Willoughby Street factory in Brooklyn, New York.

During the early years of the firm's existence, Pond sensed a need for a method of time distribution on a national basis, principally to railroads to assist in standardizing schedules throughout the various time zones that existed at that time, and to commercial organizations and businesses throughout the country.

An earlier system devised by Gardner and used in Washington, DC, provided for a signal sent via exposed lines at minute intervals, to a group of key-wound secondary clocks located in many government buildings. The system's limitations consisted of the necessity for weekly winding of the clocks, and the problems encountered with the connecting wiring which caused the clocks to stop in the absence of the transmitted signal. It was inevitable that the two systems be combined for their individual advantages ... Pond's with its automatic hourly rewinding, and Gardner's with its concept of remote synchronization. Tests using a limited number of clocks connected to local telegraph lines were conducted in Chicago in the mid 1880's which proved so successful that Pond purchased Gardner's patents, and began producing his Self-Winding clock, available with the synchronizing apparatus.

Pond's patent number 408,846 of August 13, 1889, titled "An Automatic Time Signalling Device for Time Service" laid the groundwork for Self-Winding to become the vehicle for the distribution of correct time, in cooperation with the Western Union Time Service Group. This organization, founded in 1877 and headed by James A. Hamblett, distributed hourly time signals from the Naval Observatory in Washington, DC, to various regional offices, and then to subscribers to the program via local telegraph lines to specially equipped Self-Winding clocks with an optional synchronizing device built in.

Self-Winding and Western Union enjoyed a lengthy partnership in which Self-Winding manufactured and maintained the clock mechanisms in their facilities while Western Union provided field service and on-site adjustment, battery replacement, and minor repairs. These clocks were provided on a lease or rental arrangement to jewelers and various industries requiring accurate time display.

Train Stations, Bus Terminals, and large manufacturing plants were among the subscribers that utilized the service, with their own master distribution systems operating from the central unit which received the synchronizing signal. Self-Winding manufactured a vast assortment of clock styles and designs, including in part; Tower, Post, Bracket, and Watchman's Time Detectors. Additionally, Program Devices were available as optional additions for use in Public Buildings, Schools and Universities, and Railroad Stations. Also available, in very limited supply, was the fully jeweled Astronomical Regulator employing the Gerry Gravity Escapement, for applications that required extreme accuracy.

By 1908 the Self-Winding firm had issued a catalog of some 146 pages with clocks of all descriptions. After the Great Depression their business declined and demand for self winding clocks diminished greatly after World War 11, though the firm maintained an office in New York City until about 1970.

Self-Winding discontinued operation in the late 1960's, succumbing to modem methods of time transmission, leaving behind a legacy of innovative manufacturing and the practical and inexpensive transmission of accurate time to the American public.

Martin Swetsky, FNAWCC
Brooklyn, New York
January 1991

The Story of Communications. I just received the latest Mercer University Press catalog. They list a reprint of Oslin's *The Story of Telecommunications* at a cost of $30 in paperback plus $4 for shipping and handling. The following is their description of the book:

> This is George P. Oslin's life work. Among hundreds who told him their experiences were Thomas A. Edison, William Henry Jackson (Civil War soldier, pioneer photographer, and covered wagon bullwhacker), and William Campbell (last surviving Pony Express rider). Facts from company documents, thousands of newspapers, magazines, and books, and more than 100,000 letters and diaries of the pioneers were pieced together and condensed into the real story of their struggles, strategy, and success.

"I marvel at the wealth of history [George P. Oslin] witnessed and recorded during [his] lifetime! [His] Western Union career brought [him] in touch with many of the giants and pioneers who forged today's telecommunications industry.... I commend [his] scholarship and [his] persistence in researching and writing such a thorough survey of the early days ... a herculean task."

-Robert E. Allen, former chair of the board, AT&T

Their address is: Mercer University Press, 6316 Peake Road, Macon, Ga 31210-3960. (800)637-2378. www.mupress.org

AtoZ. Dave Pennes' revelation in the last Keyletter kicked off a lot of interesting correspondence about the AtoZ keys:

Tony Rogozinski: I have one ATOZ with label and it does have the "1" on the bottom of the base. I have several others of unknown origin with no label but very similar construction/near identical parts with no "1" on the bottom. One even came with the ATOZ wedge. Certainly if they were continuing to make keys after losing the lawsuit they would most likely have changed the mold so as not to have the identifying "1" on the bottom of the base.

Steve Douglas. My AtoZ is a nickel base original model, ser# 6504 and has the #1 "incised" on the bottom of the base. Interesting observation, I have never had a second one to compare it to! I was hoping sometime you might survey Autoplex owners to get an idea of how many are around and serial numbers, like you did with the upright. I am aware of about 6 or 7, likely there are more. Russ K. and I made the first (?) Autoplex to Autoplex QSO on wireless, (20 CW) and have taken some photos, hope to get in "Upfront in QST" with any luck, but it was a real blast! Russ put it nicely during the QSO....."this is like taming a wild horse"!

Dave Pennes. I think that I have successfully reproduced the Mecograph tiger striping. The steps are as follows:

1. Steel and brass pieces must be copper plated.
2. Polish to remove oxidation.
3. Wash thoroughly in soap and water, then denatured alcohol, then clear water.
4. Paint grease over where the copper stripes are to appear.
5. Dip the entire object in "Brass Block" obtained in gunsmith or sporting goods stores. It is made by Birchwood Laboratories, Inc. Eden Prairie, MN 55344.
6. Wash thoroughly.

Neal McEwen. I checked my A-to-Z bugs for the "incised 1". Three have it and three don't. What is really interesting is that the Liggett "Texas" bug has it, which confirms its hypothesized bloodline. See TVC #13 p. 10. Here is a report that I hope the rest of you will add to. Perhaps we can spot a trend. What does the "1" mean? I suspect it is the mark of a machinist to identify his work. I've laid all of mine out side by side and don't spot any trends, even in the serial numbers vs. the "1"s. I think all we can conjecture is machinist #1 made some of them and some of them were made by someone else. Or #1 forgot to stamp some of his work. Don't you wish old keys could talk? I think it is safe to say that we can use the "1" to identify bugs missing a label or with an Albright label as A-to-Z bugs. Thanks to Dave Pennes for putting us on to this tip.

OWNER	Ref. Nbr.	#1?	BASE SIZE	LABEL	S/N	BASE	TYPE
K5RW	1.	Y	6 ½ X 3 3/8	The Improved Vibroplex	6504	Nickel	Single lever, small frame
K5RW	2.	Y	"	Albright-WUTELCO		Nickel	Single lever, small frame
K5RW	3.	Y	"	Removed		Nickel	Single lever, small frame, lg. binding posts[1]
K5RW	4.	Y	“	The Single Lever Transmitter, Albright WUTELCO[2]	9043	Japanned	Single lever, small frame
K5RW	5.	N	“	Albright, WUTELCO		Japanned	Single lever, small frame.
K5RW	6.	N	“	The Improved Vibroplex	5976	Green	Single lever, small frame
K5RW	7.	N	“	The Improved Vibroplex	6748	Japanned	Dual lever
K5RW	8.	Y	“	V.D. Liggett	1009		X model clone
N7CFO	9.	Y	6 ½ X 3 ½	The Improved Vibroplex	6282	Black Japanned	Single lever, small frame
N7CFO	10.	Y	6 ½ X 3 ½	Albright, WUTELCO		Red Japanned	Single lever, small frame

If you have an AtoZ bug or a bug with the “1” incised in it, please provide information in the format above, and I will publish it in the next Keyletter.

> **Don Korvonan:** A few weeks ago I put out a little blurb about the Auto-Mate K5/50 keyer, which was made by Ben Woodruff - W9UE in Chicago. I had a few responses confirming the essence of what I had written: that W9TO and W9UE collaborated on the design of the "TO" keyer. W9TO sold his rights to Hallicrafters, and W9UE began to manufacture the Auto-Mate, in both assembled and kit form. Shortly afterwards, in the early to mid 60s, Woodruff was threatened with legal action by Hallicrafters, and Auto-Mate was a thing of the past.
>
> Over the years I have seen just a few of the Auto-Mate keyers, and purchased one a few years ago. As with all others, it has a rather unique 2 tone green appearance. The front panel is dark green and the cabinet a lighter shade of green. In fact, we used to refer to the Auto Mate at our club station as "The Green Keyer."

---

[1] It has really large binding posts, larger than a Vibroplex Dual Lever. K5RW has no reason to suspect they are not original as the nickel plate is consistent with the rest of the bug.

[2] Number 4 is an old style label like the early Martin bugs. The rest of them are painted labels, black paint over brass or nickel. I think this is the oldest one even tho the serial number is inconsistent.

I was surprised to run into another Auto-Mate keyer, but it is 2 tone gray! Other differences:

1. The gray keyer has a built in speaker for the monitor, with appropriate cutouts on the front panel
2. The gray one has the words "Electronic Keyer" and "Ratio" on the front panel.
3. The speed and ratio knobs are different.

Both are identified on the front panel as Auto-Mate K5/50. Has anyone seen either or both before? Just when you think you know something, another wrinkle appears. Guess my old buddies and I can no longer refer to the Auto-Mate as "The Green Keyer".

Monkeying with the MON-KEY, de Skip Freely, K6HMS. I recently acquired a Mon-Key to replace one I had from 1959 through 1962. It is in great shape, but after plugging in into a Variac and bringing it up slowly to 120VAC, it just hummed loudly and refused to respond. Since my key collection is a working collection, I decided to fix it. My comments and information might be helpful to others.

When I removed the cover (3 screws; 2 at top of control panel, 1 under unit at center of opposite end) for inspection, everything appeared to be in good shape, except for the wax-filled capacitors, which obviously needed replacement. The resistive line cord was in fair shape, but a kink in the middle was carefully worked out, and some shrink tubing added for strength. I measured the resistance of the cord to be 360 ohms cold, and remembered that the voltage drop across the cord resistance was about ½ of the total of the cord and the filaments of the 3 tubes. If you every used a Mon-Key, you occasionally experienced accidental contact with the key lever or other metallic terminal, which gave you a nasty shock you never forgot. After recovering your senses, you also sent mental lightning to Wiley Wenger, the designer of this diabolical beast. I have a 1:1 power isolation transformer (Triad N-53M, 115/115VAC + /-5%, 0.74a) I use for testing of transformerless electronic devices like the MonKey; one side of the 120VAC line is attached directly to the chassis, so you get a nasty shock from contact with the circuits. The isolation transformer permits grounding of the chassis while working on the unit, and eliminates the risk of electrical shock.

N7CFO provided me with a 5 page document on the Mon-Key. While it contained an incomplete schematic, it did not provide the component values of locations within the unit. To support my work, I generated a schematic diagram and physical layout with more information, which were helpful. I hope to find more time in the future to identify and list all of the other components, particularly the resistor strings Ra, Rb, and Rc.

I removed capacitors (Cl, C2, C3, C4, C5, and C6) from the unit, and determined that the values were as follows:

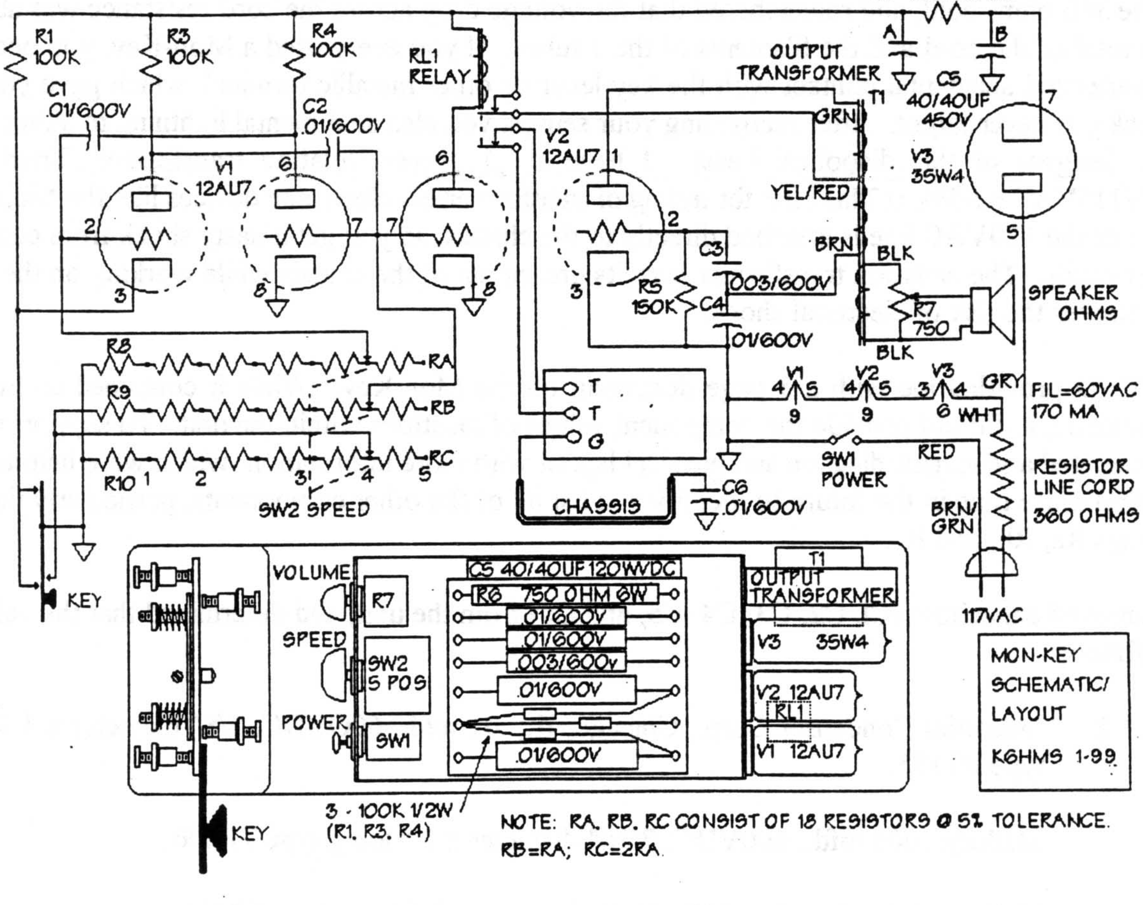
Cl, C2	Industrial Condenser Corp., Chicago, IL; .01 mfd., 60OVDC; 3/8" diameter x 1 3/8" long; type PT135.
C3	Mallory; .003 mfd., 600VDC; 7/16" diameter x 1 " long; type TP406,
C4, C6	Mallory; .01 mfd., 60OVDC; 7/16" diameter x 1 " long; type TP406.
C5	Cornell-Dublilier; 40/40 mfd., 1 5OVDC dual electrolytic; 1 " diameter x 1 3/4" long.

It is hard to find exact replacements for these older components, since most electronics parts stores carry lower voltage capacitors suitable for modern solid-state circuits. After looking for exact replacement parts at several swapmeets, I substituted the following components:

Cl, C2, C4, C6	Sprague; .01 mfd, +/-5%, 50OVDC; 7/16" dia. X 1 1/4" long; type 715P.
C3	Sprague; .033 mfd, 60OVDC; 3/8" dia. X 1 1/4" long; type 6TM-S33.
C5	2 each Cornell-Dublilier; 40 mfd, 45OVDC; 7/8" dia. X 2" long; type WBR40-450.

After replacing these components, I again brought the unit up slowly, using the isolation transformer. It still did not work, and I checked the tubes (2 - 12AU7, 1 - 35W4) on a transconductance tube tester. The tubes were pretty well shot, so I obtained "new" tubes at a swapmeet. After replacing the tubes, the unit worked fine. As an aside, the capacitors Cl and C2 can be changed to .01 5 mfd, or the present .01 mfd capacitors paralleled with .005 mfd capacitors to lower the speed range if desired.

A little time spent cleaning up the key paddle mechanism, and careful adjustment, has brought back the feelings of old. The MON-KEY is dated and nostalgic, but when set up properly, can produce excellent code.



I have posted a copy of this article and a schematic on the N7CFO web page at http://www.qsl.net/n7cfo/index.htm. If you need a good look at the schematic it can be downloaded and sized to meet your needs.

Skip Freely. You mentioned the Catlin method. Here is information on it from "American Telegraphy & Encyclopedia of the Telegraph", William Maver, Jr., Maver Publishing Company, New York, 1912, page 57c.

"The manner of holding the key in sending which is adopted by many of the best and speediest senders in this country is known as the Catlin method. According to that gentleman (Mr. Fred Catlin), the key should not be held tightly. The end of the index finger should rest on the edge of the knob, using the thumb and second finger for steadying. The fingers should be arched and pliable, not straight or rigid. 'The wrist and forearm should do the work, the finger tips and thumb being used as the end of the lever.' The key should be so placed as to allow the elbow to rest easily on the table or desk. The degree of tension on the spring of the key will vary with the sender. Some of the speediest senders use a very stiff spring."

When I was learning code at Santa Ana Junior College in 1948, Horace Bates (W6QZQ) was the instructor. Of course, he emphasized receiving techniques, but stated that sending was even more important to ensure the "goodness" of the operator over a lifetime. He mentioned the "glass arm" and swings one develops as signs of weakness, which could be overcome by proper technique. He stated that the Catlin method (he never did explain what it was, but the following description is probably accurate) was crucial to good sending, and demonstrated and had us practice exercises to strengthen and improve our sending. He said that speed was immaterial; technique had to be developed at one's natural speed. As one gains control of the key, with practice and strength, speed can be gradually raised. He emphasized the muscles of the fingers, hand, wrist, and forearm as being complementary to each other, with each contributing their share. But one group alone could not generate good code. He has us send with the elbow on the table on a thin pad with the key. The angles of the body to the arm, the "looseness" of the fingers and wrist, the comfort for each person were all emphasized. When forming the dots and dashes, each of the contributors (fingers, wrist, forearm, elbow) is equally important. He had us practice sending using exaggerated motions at very slow speeds, and said that daily practice was necessary to become comfortable, and to maintain optimum performance.

I remember a great straight key operator was John Nelson, W6EAR. He had been a professional telegrapher, and seemed entirely proficient on the straight key, sideswiper, or bug with a remarkable capability. Until advanced age got him, he had a fist that generated music! I could always copy his straight key 5 wpm faster than anyone else! He was a Catlin man.

I have two keys I need to identify:

1. Straight key which appears identical to the Signal Electric Co. Spark Key at the top of page 32 of Perera's Telegraph Collector's Guide. It is brass amber lacquered overall, with a navy knob just like the one in the picture. It has mica insulation underneath, with a heavy wire connecting the contact screw with the hot post screw. The contacts, however, are 1/4" square. No markings anywhere. It is in rough shape, but has been cleaned up.

2. Bug which is all chrome with black plastic paddle and knob. The paddle and knob are very thin and delicate. It has a 1/8" square dot vibrator arm with two 3/8" thick by 5/8 diameter weights with knurled thumbscrews (all - no round head screws anywhere). All thumbscrews and locknuts are cross-knurled in an "X" pattern. The base is 2 1/2" x 6 1/2" x 1/2" steel, with slightly rounded corners. The shorting key has a black plastic knob that is cylindrical, 5/8" long by 5/16" diameter; when the shorting key is closed, it is "across" the base; when the shorting key is open, the knob

is away from the operator. The frame is squared up; 1 5/16" wide overall, 3/8" front-to-back, arms protruding out additional 1 3/16", frame and arms 3/16" thick. The damper post is conventional, and the damper wheel is 1/8" think by 5/8" diameter. Heavy wires soldered to screws for dot post, dash post, and hot terminal. Three ½ " diameter rubber feet. No markings anyplace. It is in like-new shape, except for a few plating checks. This bug is just different from anything else I have seen, but maybe I am not as observant as I should be.

Henry Engstrom called. He tells me that the BC639 is a VHF (100-156 MHz range) receiver and the BC638 is a frequency meter. (See Keyletter #26, page 284) These units were associated with the BC640 transmitter. This was a 40 watt AM transmitter that was typically used for a control tower transmitter. Henry used one in Korea. He does not recall that it had CW capability.

Ron Brown. I picked up a Lorenz ZTK.129 German key and can find no references to it. It is on a thin metal base, with a metal cover over the works except the knob. It is very well made, with a cord and double plug. The plug has two prongs on it, something like banana plugs, except longer. Does anybody have information on this brand and/or model?

Chuck Grey. On page 163 you show a picture of a Teletek and wonder about the similarity with Bencher. I have also, and have noticed some minor changes in Bencher keys. I wrote Bob Locher in 1994 and got the enclosed answer. I have 2 early chrome Benchers without the keeper screws, but they both are on 5/8 thick bases. The first Teletek ad was in the October 1975 Ham Radio Oct 75 Hills died in 78 but according to Locher had licensed the patent to HAL.

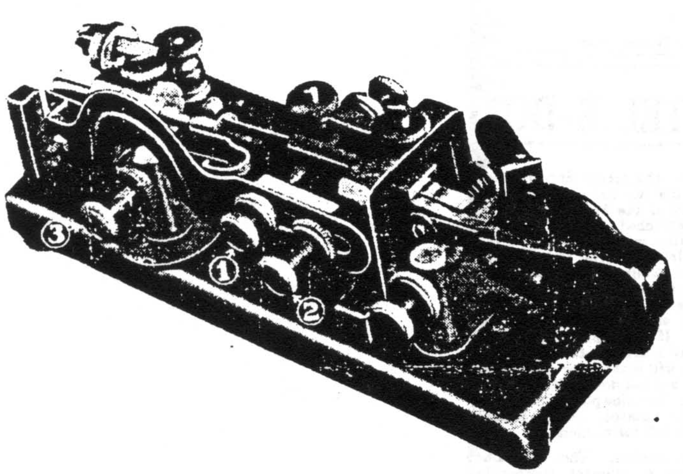
WB4FJJ sent me a copy of a obituary dated 12-2-78 (paper not given): "HILLS, Joseph A., age 72 of Las Vegas, Nev. formerly of Dayton. He was a self employed Electronic Inventor and HAM operator since 1922 with the call letters W8FYO, and a WWII veteran. Survived by sister Mrs. Dorothy Berk of Washington Twp. Several nieces and nephews. Funeral services 1 PM Wednesday at Schlientz and Moore Funeral Home, 1632 Wayne Ave. Pastor Bette De Turk officiating. Internment Memorial Park Cemetery. No visitation."

Patent drawings etc. for Hills, FYO key are on p.25 of the *Introduction to Key Collecting* by French showing that a patent was issued Jan 19, 1965. That means it expired 1982, which was the year Vibroplex started making the Brass Racer - I don't think this is a coincidence. HAL stopped selling FYO keys 1976.

Tony Rogozinski sent along some interesting items. He is the proud new owner of a Tele-Dot. This is one of the more obscure pieces of telegraphy equipment out there. Fortunately, it came with instructions and the original box and he sent me a copy of the original instructions. I found some ads in early copies of the Railroad Telegrapher and have included them in the following pages.

Well, that is it for number 27! Please note that I have moved my web page to the following address: "http://www.qsl.net/n7cfo/index.htm". By the time you receive this I will have updated the downloadable index. Speaking of the web page, I have put up quite a spread on Don Iverson's keys. It is well worth a look. In the last Keyletter I mentioned downloading photos from web pages. I now have over 500 photos in the "library", and add to it daily. The digital photos are very handy and the film is sure cheap. The last few pages of this Keyletter are the telegraphy related items from a 1900 J.H. Bunnell catalog. Enjoy!

73 - Lynn



INSTRUCTIONS FOR ATTACHING TEL-E-DOT TO VIBROPLEX

Remove the weights and contact spring from the vibrating rod, then place the Tele-E-Dot hook on the rod to take the place of the contact spring, then replace the two weights on the vibrating rod.

Attach the Tel-E-Dot by removing the screw (No. 1) which holds the vibrating rod under control at the base of the Vibroplex, also remove the screw (No. 2) which holds the spring that also controls the vibrating rod. Vibroplex machines may vary slightly as to distance between the screws. Judgment should be used in placing the Tel-E-Dot on if these screws in some cases should prove to be too far apart or too close up. If necessary, the end of the groove in the Tel-E-Dot can be filed out to give a perfect fit. However, this would be necessary only in a few instances. Adjust the hook to fit the contact spring. Do not try to adjust the contact spring to fit the hook, as this would strain the spring and make it too hard to pull over. The spring should be placed so that it will lie firmly against the screw (No. 3) of contact post. Then place the hook over the spring. If necessary, bend the hook in order to make it reach, or squeeze it in slightly in case it reaches too far to pull the contact spring over. Operators should be very careful to have this spring and hook perfectly adjusted.

Use adjustment screw of attachment to secure required number of dots, also to make it light or heavy. Properly adjusted, the Tel-E-Dot will do all and more than claimed for it.

The cut as shown above is slightly different from that which appeared in our ads. The operation is the same, but there is improvement in the manner of attaching. Be careful to follow the above instructions.

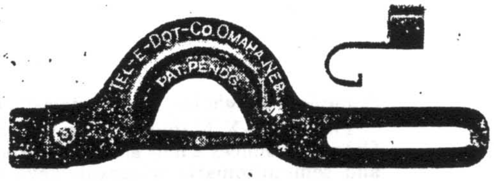
The Tel-E-Dot has had every possible test and has endorsement of expert operators. If properly adjusted, you will be greatly pleased.

TEL-E-DOT CO.
604 Bee Building Omaha, Nebraska

Original Tel-e-dot instructions
Courtesy of Tony Rogozinski

WONDER OF THE TELEGRAPH

THE TEL-E-DOT



An absolutely firm contact for sending telegraph dots.

Can be attached to all standard Vibroplex sending machines (except Model X, Midget and Upright).

Will send perfect dots through long circuits in bad weather conditions; takes the flutter out of imperfect bug sending; brings it to perfection.

Perfectly adjusted for light, heavy, fast or slow sending instantly.

No more signals as X for a 2, or V, for a 4; makes the signals perfect.

This attachment is a great thing for broken nerves or stiff hands and arms.

Young men cannot afford to waste time learning to send without a Tel-E-Dot.

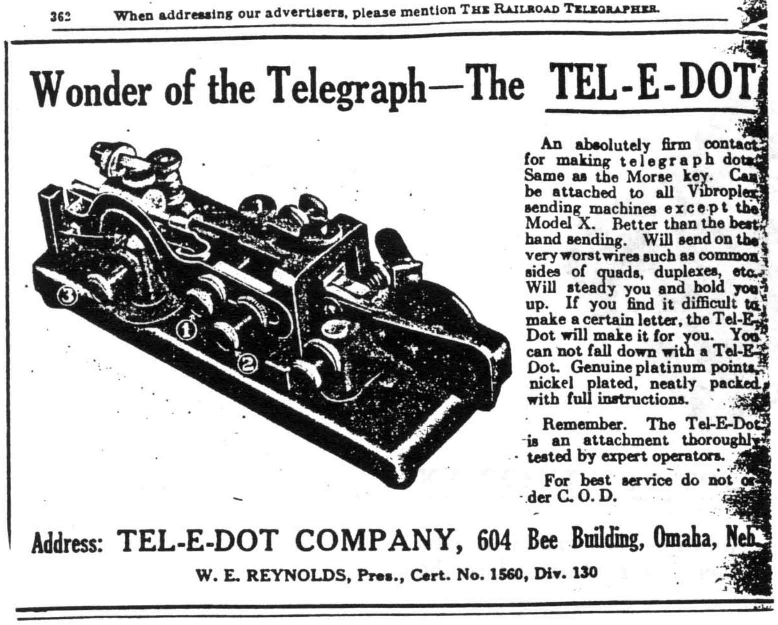
The attachment is easily adjusted, Nickel plated, Genuine Platinum Points.

Introductory price, $3.50; neatly packed, full instructions.

Reference: U. S. National Bank, Omaha, Nebraska.

The Tel-E-Dot Company
604 Bee Building, Omaha, Nebraska

Railroad Telegrapher
November, 1920



362 When addressing our advertisers, please mention The Railroad Telegrapher.

Wonder of the Telegraph—The TEL-E-DOT

An absolutely firm contact for making telegraph dots. Same as the Morse key. Can be attached to all Vibroplex sending machines except the Model X. Better than the best hand sending. Will send on the very worst wires such as common sides of quads, duplexes, etc. Will steady you and hold you up. If you find it difficult to make a certain letter, the Tel-E-Dot will make it for you. You can not fall down with a Tel-E-Dot. Genuine platinum points, nickel plated, neatly packed with full instructions.

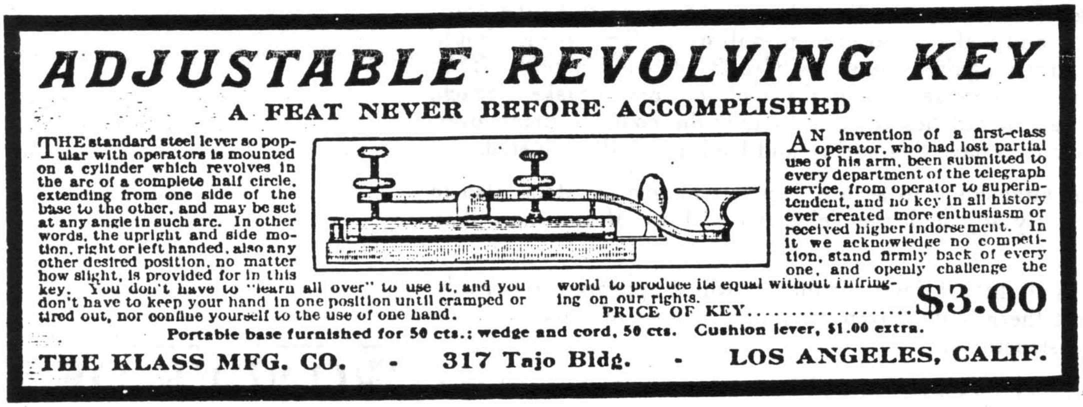
Remember. The Tel-E-Dot is an attachment thoroughly tested by expert operators.

For best service do not order C. O. D.

Address: TEL-E-DOT COMPANY, 604 Bee Building, Omaha, Neb.

W. E. REYNOLDS, Pres., Cert. No. 1560, Div. 130

Railroad Telegrapher
September, 1920



ADJUSTABLE REVOLVING KEY

A FEAT NEVER BEFORE ACCOMPLISHED

THE standard steel lever so popular with operators is mounted on a cylinder which revolves in the arc of a complete half circle, extending from one side of the base to the other, and may be set at any angle in such arc. In other words, the upright and side motion, right or left handed, also any other desired position, no matter how slight, is provided for in this key. You don't have to "learn all over" to use it, and you don't have to keep your hand in one position until cramped or tired out, nor confine yourself to the use of one hand.

AN invention of a first-class operator, who had lost partial use of his arm, been submitted to every department of the telegraph service, from operator to superintendent, and no key in all history ever created more enthusiasm or received higher indorsement. In it we acknowledge no competition, stand firmly back of every one, and openly challenge the world to produce its equal without infringing on our rights.

PRICE OF KEY..................**$3.00**

Portable base furnished for 50 cts.; wedge and cord, 50 cts. Cushion lever, $1.00 extra.

THE KLASS MFG. CO. - 317 Tajo Bldg. - LOS ANGELES, CALIF.

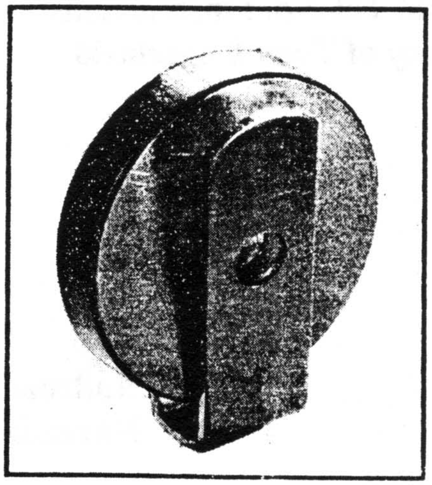
Railroad Telegrapher, August 1915
Courtesy of Tony Rogozinski

Adjusting Weight for Semi-Automatic Keys

The Speed-X Manufacturing Co., San Francisco, Calif., announces a new addition to their line of hand and semi-automatic telegraph keys and electronic products.

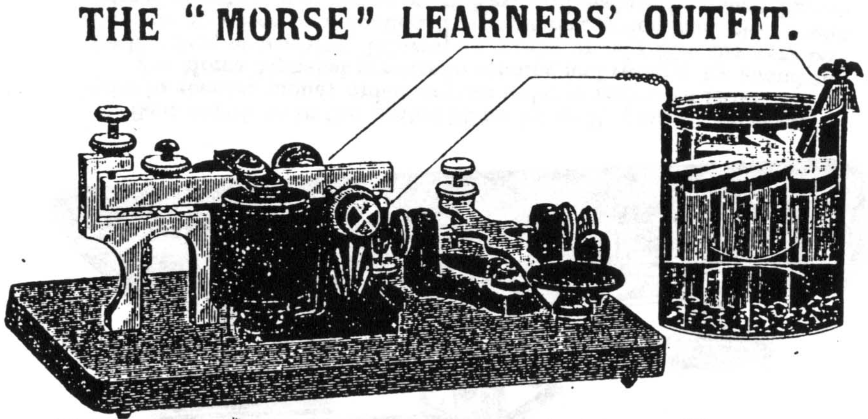
This new item is an adjusting weight for attachment to the vibrator rod on semi-automatic keys for purposes of speed adjustment. Utilizing an entirely different principle to achieve its locking action, this weight eliminates the necessity for locking thumbscrews. Slight fingertip pressure on the release tab is all that is required to permit the weight to be shifted to a new position on the vibrator rod. Once set, the weight remains securely locked and will not loosen under the vibration of high speed keying.

These units may be used singly or in combination to provide any desired dot speed. Designed expressly for the Speed-X semi-automatic keys, the weight has a standard size opening that will permit it to be used with most other keys that have a vibrator rod of the same diameter.



CQ, March 1947

THE "MORSE" LEARNERS' OUTFIT.



Price, **Morse Outfit Complete,** with Battery, Book of Instructions, Wire, Chemicals and all necessary materials for operating	$2 50
"Morse" Instrument alone, without battery..	2 00
"Morse" Learners' Instrument, without Battery, sent by mail, prepaid	2 75
Cell of Battery complete	65
Morse Instrument, wound with fine wire, 20 ohms resistance, for use also on out-door lines of from 200 feet to 10 or 15 miles in length, price, without Battery, etc.	2 25
Sent by mail, prepaid	2 75

Battery cannot be sent by Mail.

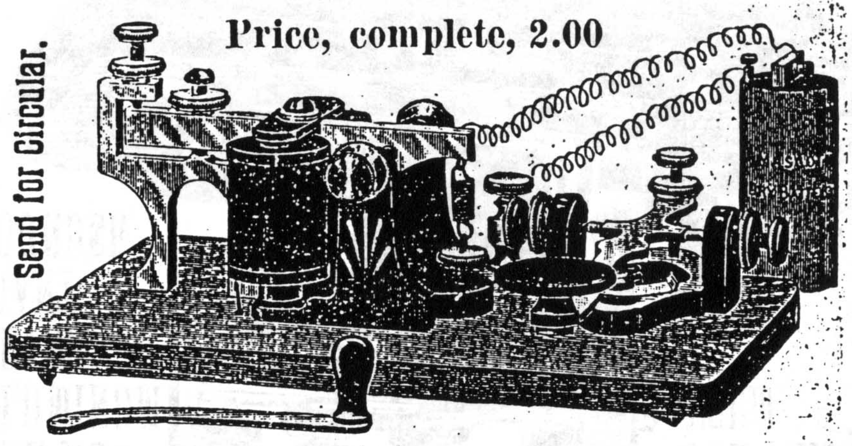
The above will be sent C. O. D. to points not over 500 miles distant, if one-third of the amount of the bill is sent with the order.

No goods sent more than 500 miles C. O. D.

Remit by Draft, Money Order, Registered Letter, or Express Money Order.

The "New Departure," Learners' Outfit.

Price, complete, 2.00



Send for Circular.

With Mascot Dry Battery and "The Operator's Favorite" Steel Lever Key.

PRICE, COMPLETE, $2.00

The IDEAL SET for HOME PRACTICE. Always Ready.
NEAT, CLEAN, ATTRACTIVE.

The INSTRUMENT is our well-known "MORSE LEARNERS' APPARATUS" with a Steel Lever Key, arranged for use with our "MASCOT DRY BATTERY."

The "circuit-closer" is detached from the key, as it will prolong the life of the battery to leave the circuit open when not using the instrument. With "circuit-closer" detached the Mascot Battery should last for several months' practice. The "circuit-closer" is sent with each apparatus, so that it can be replaced when it is desired to operate two or more instruments on the same circuit with bluestone battery.

Extra Mascot Renewal Cells, 20 cents each.

The magnets can be rewound, at a slight expense, for use on longer, out-door lines.

Instruction Book goes free with each outfit.

The complete outfit, packed in a wooden box, weighs about 7 lbs.

Shipped by express to any address on receipt of $2.00.

Manual of telegraphy sent free on application.

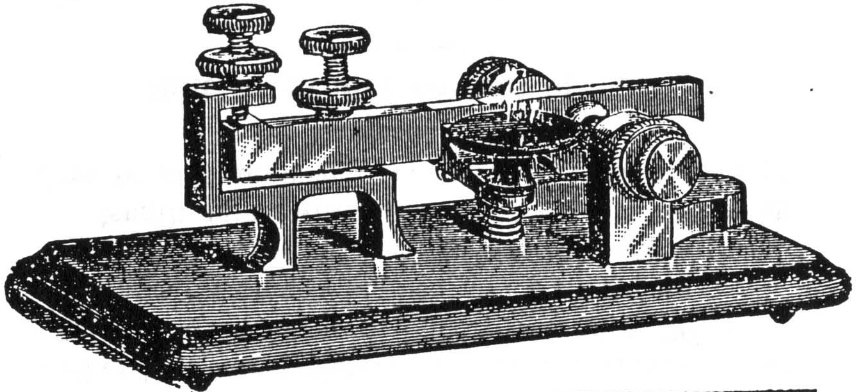
J. H. BUNNELL & CO.,
NEW YORK.

Telephone Catalogue and Manual of Telegraphy. J.H. Bunnell & Co. 1900

No. I MECHANICAL
Telegraph Instrument.

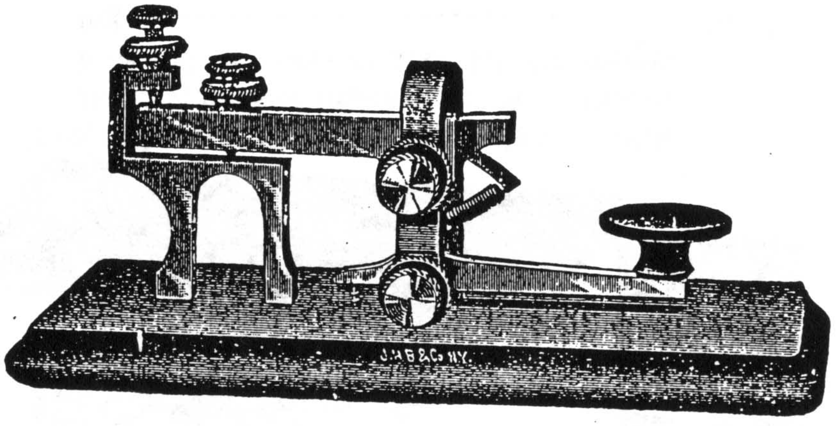
(Patented April 4th 1882.)

Price, with package of Morse Alphabet Cards, Telegraph Instruction Pamphlet etc., $1.20.



No. 2 Mechanical Telegraph Instrument.

Price, with Telegraph Instruction Pamphlet, Packet of Morse Alphabet Cards, etc., $1.50.



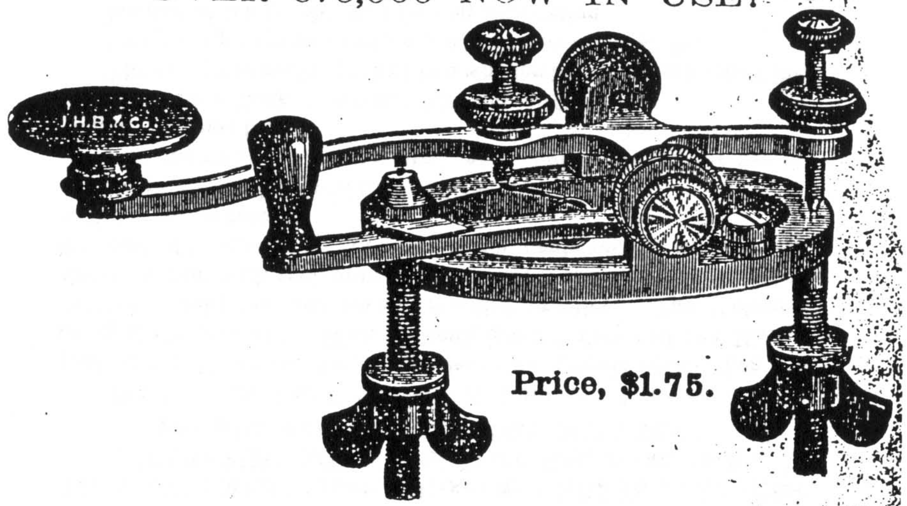
Sent anywhere in the United States by mail, prepaid, on receipt of price in stamps, money order, express order or registered letter.

For Morse Alphabet practice in sending and reading by sound and for learning, or teaching Telegraphy, works exactly like the very best Sounder and Key Combination Telegraph Set, giving loud, clear sound with slightest force or movement of Key. All made in first-class Instrument Composition Brass, same pattern as best Giant Sounders.

Steel Lever Solid Trunnion Key.

PAT. FEB. 15th, 1881.

OVER 373,000 NOW IN USE!

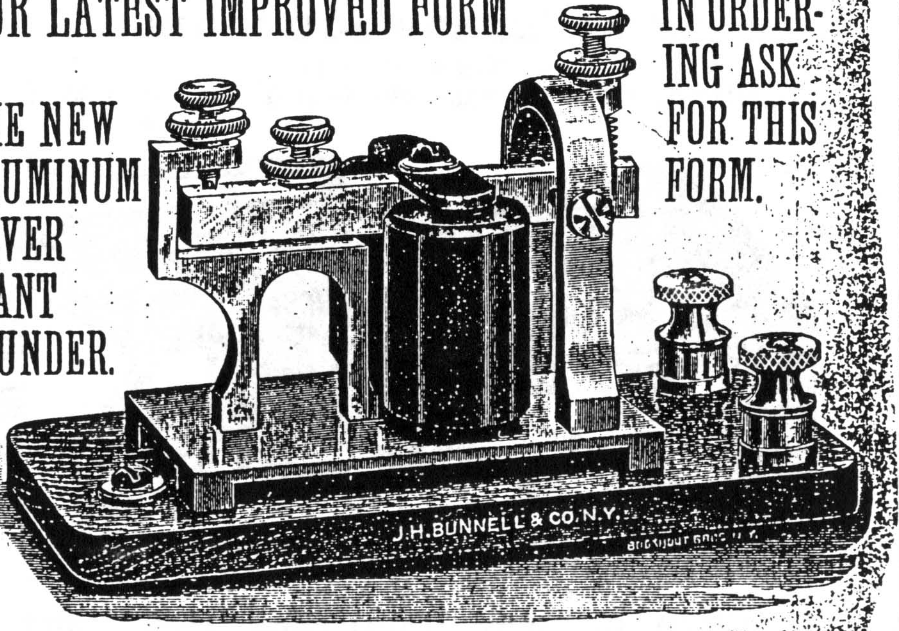


Price, $1.75.

OUR LATEST IMPROVED FORM

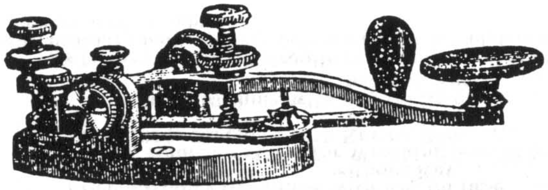
THE NEW ALUMINUM LEVER GIANT SOUNDER.

IN ORDERING ASK FOR THIS FORM.


J.H.BUNNELL & CO.N.Y.

Price,	4 Ohm	$2.25
"	20 "	2.75

Telephone Catalogue and Manual of Te' raphy. J.H. Bunnell & Co. 1900



LEGLESS PATTERN STEEL LEVER KEY.

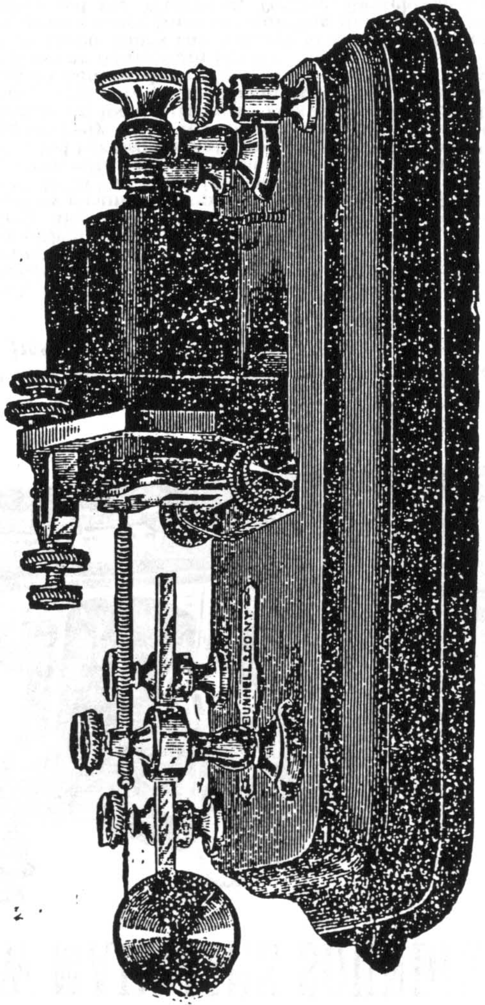
A beautiful and perfect Key suitable for use on fine desks, or whenever a Legless Key is preferable. PRICE, carefully boxed, and sent, prepaid, by mail, to any part of the United States, $2.25.

This form is especially convenient for operators who prefer to possess their own private Key, as it can be placed anywhere or removed, without boring holes.

FIRST-CLASS MAIN LINE RELAYS.

SOLID TRUNNION, SINGLE PIECE ARMATURE.

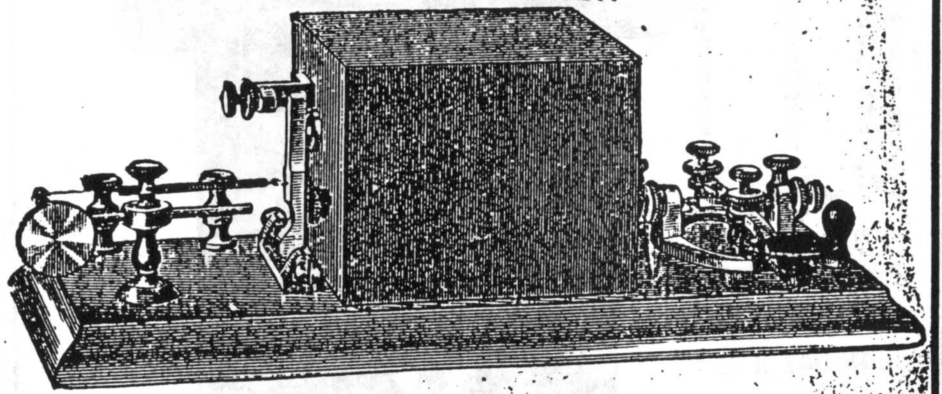
PATENT APPLIED FOR.



Price, 150 ohms resistance $7 00
" 200 " " 7 50
" 300 " " 8 00

BOX SOUNDING RELAY AND STEEL LEVER KEY,

COMBINATION SET.

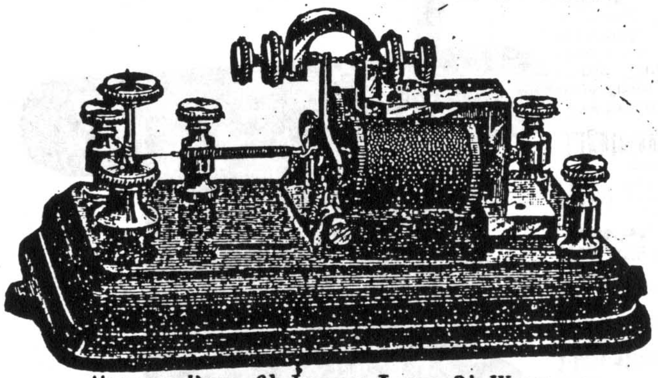


Of best construction for loud, clear sound, without local sounder. Polished Mahogany Box and Base. Suitable for lines of any length.

Price, with Steel Lever Key on base, and wound to 150 ohms, with silk covered wire, $8.00.

NEW FORM PONY RELAY.

J. H. BUNNELL & CO.'S LATEST DESIGN.



Size of Base, 6½ Inches Long, 3½ Wide.

These beautiful little Relays are perfect instruments for working any line of less than 75 miles in length.

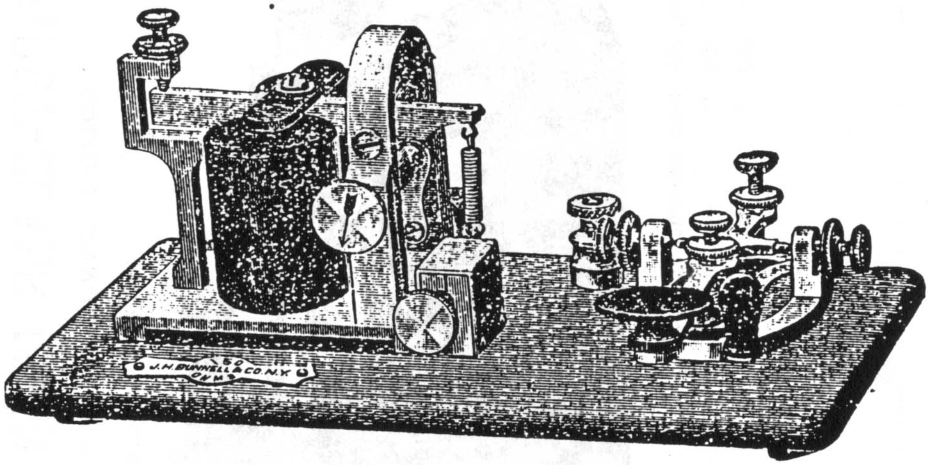
They are elegantly finished and mounted on polished mahogany base, with ornamental surbase; all being exactly as shown here.

Price, wound to 20 or 30 ohms resistance, for lines up to 15 miles in length $3 50
" 40 or 50 ohms, for lines 20 to 40 miles........................ 4 00
" 50 to 100 ohms, for lines of from 40 to 75 miles........................ 4 50
With polished rubber-covered magnets, 50 cents extra.

First-Class Main Line W. U. Relays, $7.00.

Telephone Catalogue and Manual of Telegraphy. J.H. Bunnell & Co. 1900

NEW MAIN LINE SOUNDING RELAY.


J.H.BUNNELL & CO.N.Y.

"MCM" MODEL.

New and Important ***Improvements. Instantaneous Adjustment*** of both armature spring and distance from Magnet cores.

Both adjustment nuts conveniently located at front. The arrow on upper adjusting nut indicates the relative distance between armature and magnet cores.

The objectionable string arrangement used on old style tension springs is entirely dispensed with, and a wide and rapid range of spring adjustment obtained by a cam lever operated by the lower adjusting nut.

The "MCM" model retains all the good points of our former type of Instrument, with the objectionable features eliminated. These instruments are intended for use on main lines in place of the ordinary Relay, and dispensing entirely with the local Sounder, thus saving the continual expense of maintaining local batteries. This instrument sounds loud and clear, even with very weak currents. The most convenient instrument for Wrecking, Testing, Switchboard, or Temporary office use. They are furnished with either Brass or Aluminum Levers.

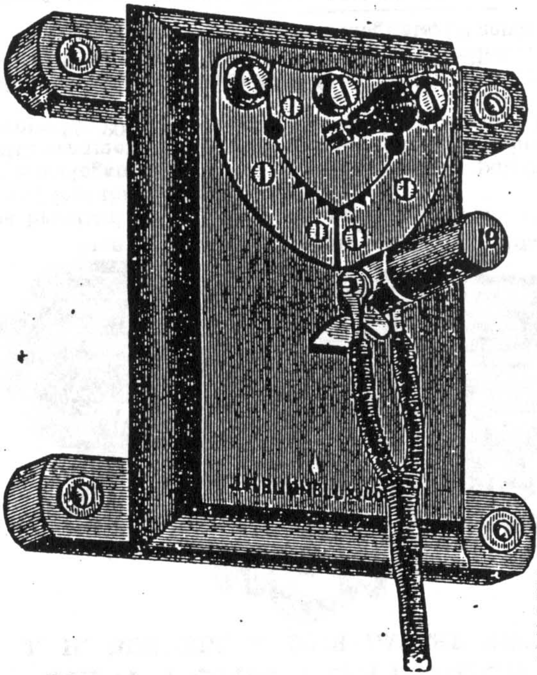
Gives three times the volume of sound given by the very best Box Relays, or any other form of Sounding Relays ever before produced.

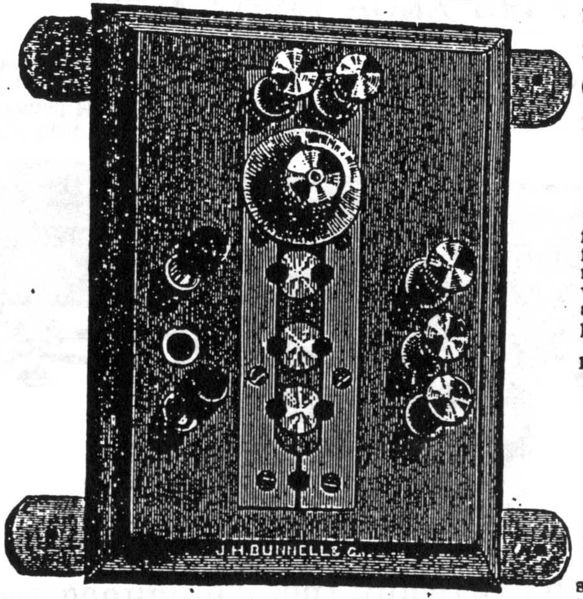
Unequaled for Wrecking, Testing, Switchboard, or Temporary Office use, and all places where it is desirable to dispense with Local Batteries.

They are made with full-sized relay magnets of 150 ohms resistance, having both *magnet and armature adjustments*, and fully suited for doing, in a greatly improved manner, the work of regular Main Line Box Relays. They are sensitive to weak currents, giving a clear working sound on circuits where, without them, a relay with local sounder and battery would be absolutely necessary.

Price, 150 ohms resistance, with Key on Base..............$9 00
" " " without Key.................... 8 00
In Mahogany Case, for Wrecking Sets, $2 50 Extra.
Price, 200 to 300 ohms, with Key on Base.................. 9 50
" " " without Key.................. 8 50
" 20 to 100 ohms, with Key on Base.................. 8 50
" " " without Key.................. 7 50

This latter class for all circuits from a mile or two up to 100 miles, when, with ordinary main battery power suitable for such lines, they are equal to the best local sounders.


J.H.BUNNELL & CO.


J.H.BUNNELL & C.

One-Line Western Union Button Switch, with Lightning Arrester.

Union Spring Cut-Out AND Lightning Arrester.

This adaptation of our patent spring jack fills the place of the old plug switch, and is the best Spring Cut-out for simply changing instruments from one line to another with plug and cord.

1-Line, without plug and cord, - - - $2 00
2-Line, without plug and cord, - - - 4 00
3-Line, without plug and cord, - - - 6 00
Plugs with three-foot cord attached, $1 25 each.

Patent Spring Cut-Out WITHOUT Lightning Arresters.

We make them of all sizes from 1 wire upwards. The insertion of plug puts instruments in circuit. Withdrawal of plug "cuts-out" reliably.

Price, 1-Wire, without plug and cord, - $1 25
Price, 2-Wire without plug and cord, - 2 25
Price, 3-Wire, without plug and cord, - 3 00
Over three wires 90 cents per line.
Plug and three-foot silk double cord, - $1 25

W. U. Switches.

In ordering Switches for large offices, give full particulars as to number and changes of wires, loops, batteries and instruments to be provided for.

Line	Perpendicular Bars	Price
1	2	$3 00
2	4	6 00
3	6	10 00
4	8	14 00
5	10	18 00
6	12	25 00
7	14	30 00
8	16	38 00
10	20	55 00
12	24	74 00

For larger sizes, special prices furnished upon application.

Telephone Catalogue and Manual of Telegraphy. J.H. Bunnell & Co. 1900